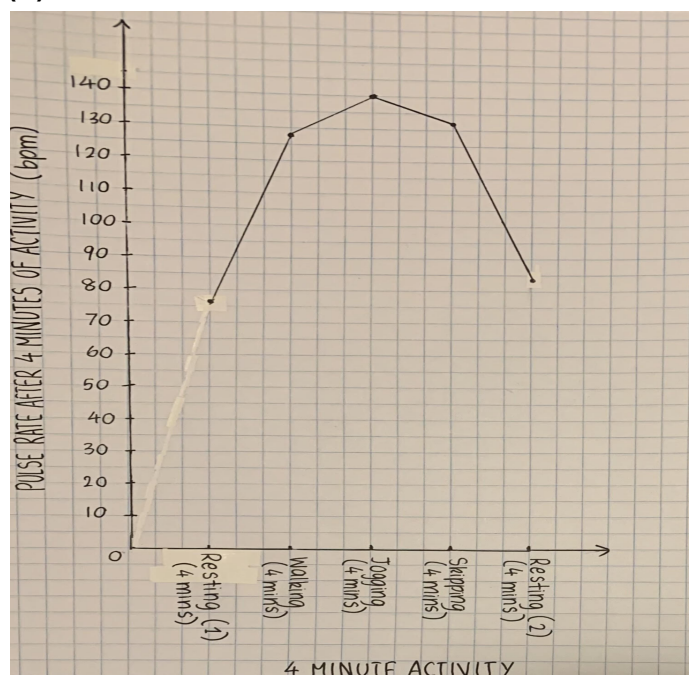


Task 1:

(a)

	PULSE RATE AFTER 4 MINUTES OF ACTIVITY (Beats/minute)				
NAME	Resting (4 mins)	Walking (4 mins)	Jogging (4 mins)	Skipping (4 mins)	Resting (4 mins)
Tiara	76 bpm	128 bpm	140 bpm	132 bpm	84 bpm
Lavigne	76 bpm	116 bpm	140 bpm	132 bpm	72 bpm,
Emma	72 bpm	120 bpm	100 bpm	96 bpm	76 bpm
Trisha	80 bpm	92 bpm	132 bpm	128 bpm	84 bpm

(b)



(c)

$$\text{MHR} = 206.3 - (0.711 \times \text{Age})$$

$$\text{MHR} = 206.3 - (0.711 \times 14)$$

$$= 206.3 - 9.954$$

$$\therefore \text{MHR} = 196.346 \text{ bpm}$$

(d)

Write a paragraph about the impact your fitness level may have on how your heart rate responded to different activities.

One's resting heart rate tends to be lower as their fitness increases, proving that the more fit a person is, the lesser the heart needs to exert itself. Physical exertions cause the heart rate to increase, the more strenuous the activity, the higher the heart rate. For example, jogging caused my heart rate to increase the most, due to it being the most strenuous activity. Additional observations from the table show that the quicker the heart rate recovery, the fitter a person is deemed to be.

Task 2:

(a)

Circumference of widest part of balloon = 49cm

$$49 \div \pi = 15.597$$

$$15.597 \div 2 = 7.799 \text{ cm}$$

$$7.799^3 \times \pi \times 4/3$$

$$= 1986.722656 \text{ cm}^3$$

$$= 1986.72 \text{ mL}$$

$$= 1.987 \text{ L}$$

(b)

Discuss the method you used to calculate the radius of the balloon and comment on the accuracy of your results.

In order to calculate the radius of the balloon, I measured the circumference of the widest section of the balloon. After finding the circumference, I divided it by 2π to calculate the diameter (15.597 cm), then I divided the diameter by 2 to find the radius which was 7.799 cm. The formula for the volume of a sphere was then used to get 1986.72 cm³. This value was then converted to millilitres and finally to litres. The accuracy of my results was based on my ability to eliminate as much human error as possible when I measured the circumference of the balloon and avoid any parallax errors while reading the measuring tape. This experiment might not have been entirely accurate due to the fact that the balloon may not have been a perfect sphere, rather an oval spherical object, thereby rendering the application of the formula for a sphere a flawed assumption.

Task 3:

(a)

Body Part	Measurement (in cm to 1 decimal place)	Ratio of my body part : my height	Ratio for classmate 1	Ratio for classmate 2	Ratio for classmate 3	Average ratio
Height	175.0	1 : 1	1 : 1	1:1	1 : 1	1 : 1
Outstretched arm span (between tips of middle fingers)	178.0	1 : 1.0	1 : 1.0	1 : 1.0	1 : 0.9	1 : 1.0
Length of femur	52.0	1 : 3.4	1 : 3.9	1 : 3.8	1 : 3.5	1 : 3.7
Circumference of head	55.0	1 : 3.2	1 : 2.8	1 : 2.8	1 : 2.9	1 : 2.9
Length of foot	24.5	1 : 7.1	1 : 7.8	1 : 8.1	1 : 6.4	1 : 7.4
Length of forearm from inner bend to wrist	30.0	1 : 5.8	1 : 6.2	1 : 6.2	1 : 6.1	1 : 6.1

(b)

(i) Comment on the similarities in the ratios found and give reasons why they may have occurred.

It is evident from the table that the outstretched arm span is equally proportional for everybody irrespective of build/height. Classmates with similar heights also had similar ratios of length of femur, foot and forearm. All the subjects are of similar age group and gender, living in the same geographical location, hence the extent of the similarities. Although it must be said that each person is unique in their own way as far as the ratios are concerned.

(ii) Comment on the differences in the ratios found and give reasons why they may have occurred.

The length of foot has quite a variance on account of them being proportional to the overall height of the subject. Similar observations to the forearm from inner bend to wrist being quite varied for me as compared to other classmates. These differences may be down to various factors such as ethnicity, diet, habits, genetics etc.

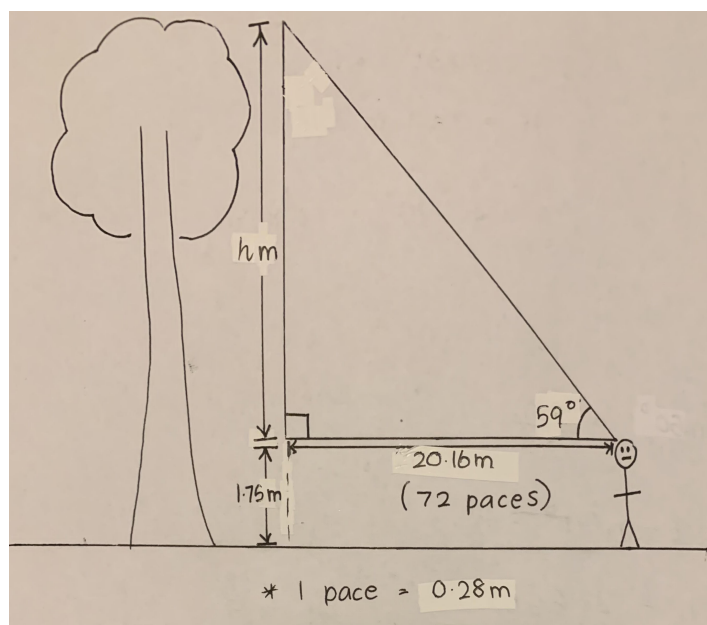
Task 4:

(a)

NAME	Height of person	Length of stride	Number of paces	Angle
Tiara	175 cm	28 cm	72	31°
Trisha	154 cm	25 cm	81	22°

(b)

Draw a diagram showing all of your own suitable information.
Calculate the height of your object.



$$\text{Angle of elevation} = 90^\circ - 31^\circ = 59^\circ$$

$$72 \times 0.28\text{m} = 20.16\text{m}$$

$$\tan(59^\circ) = h/20.16$$

$$20.16 \tan(59^\circ) = h$$

$$h = 33.55\text{m (2 d.p.)}$$

$$33.55 + 1.75$$

$$= 35.30\text{m (2 d.p.)}$$